DOCUMENT RESUME

ED 100 160 FL 006 502

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TITLE A Longitudinal Study of Mothers' Language.
PUB DATE 74
NOTE 8p.; Paper presented at the Annual Meeting of the American Speech and Hearing Association (Las Vegas, Nevada, November 1974)

EDRS PRICE MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS *Child Language; Descriptive Linguistics; *Language Development; Language Patterns; Language Usage; *Longitudinal Studies; *Mothers; Parent Influence; Psycholinguistics; *Speech Habits

ABSTRACT

A study was conducted to determine the relationship between maternal input to early language learners and language acquisition and to answer the following questions: (1) Does nursery language used with the child change after he begins to talk? (2) Is there reason to believe that the child's speech is influenced by or influences the mother's speech? The subjects of the study were 10 lower-class black mothers, speakers of urban language, and their children, all born during the summer of 1970. The verbal and nonverbal behavior of each mother-child pair was observed for a total of 10 hours between 1970 and 1974 by means of written transcriptions of dialogue, tape-recorded interviews, and written descriptions of behavior. Results of the study suggest that mothers' speech to children is much different from mother-to-adult speech, less complex, and less grammatically correct; that nursery language used with the child becomes more varied and less concrete as the child learns to talk; and that the child's speech is influenced by and influences the mother's speech. (PMP)

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A LONGITUDINAL STUDY OF MOTHERS' LANGUAGE

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What we happen to do when we talk with children has potentially important implications for how children's language develops. The emphasis in the language acquisition process in the 1970's has been to the kind of linguistic environment mothers provide for their children and to mother-child interaction. This is quite a shift in emphasis from the 1960's when the S-R paradigm where adult speech was viewed as a model for the child to imitate in the language acquisition process and from the view emphasizing language as a species specific behavioral pattern for which the human nervous system is pre-programmed to learn, and only a minimum of language input from the environment was thought necessary for a child to have normal linguistic development. (Lenneberg, 1967; McNeil, 1966). Mother's speech is now viewed as the most important source of speech input to the child in his environment supplying a rich sample of language, determining the child's responses by her intentions as speaker, and interpreting the child's language function. Cross-sectional studies began to investigate the structure of maternal linguistic input to their children usually comparing mother's speech to their children with speech to other adults.

This study which I will describe today was the earliest recent longitudinal study of mothers' speech to their children, and is to our knowledge the most extensive undertaking of this kind to date. It explores some aspects of the question of relationship between maternal input to the early language learners and acquisition of language, investigating the structure of maternal linguistic input to children comparing mother speech to their children with speech to other adults and investigating some developmental questions:

1. Does nursery language used with the child change after he begins to talk?

2. Is there reason to believe that a child's speech is influenced by or influences the mother's speech?

Therefore, in what sense is there a causal influence of the linguistic environment of the child on his development and use of language, and in what sense is there a causal influence of his linguistic maturity on his linguistic environment?

The subjects are 10 lower class black mothers, speakers of urban language, all of whom had their first born full term babies at University Hospitals in the summer of 1970 and who were part of an original 28 mother study of the effects of infant exposure on mother attachment. Five mother-child pairs were randomly selected from each of two groups of 14 mothers: the control group mothers who had the usual hospital exposure to their babies after birth, and the experimental group mothers who had 16 additional hours of contact one hour after birth and the next three days to determine whether present hospital procedures affected subsequent maternal behavior. I might add that significant differences were found between the two groups in addressing their two year olds and these results will be reported in the New England Journal of Medicine. (Ringler, Jarvella, Klaus, Kennell, Navojovsky, 1974). The experimenter remains unaware as to which group the mother child dyad are in. Of this sample of ten, six were mothers of girls, and four were mothers of boys. Social position is designated by the Hollinghead index (1958).

All the mothers returned to University Hospital in the summer of 1971 Time I and again in the summer of 1972 Time II as well as in the summer of 1973 and 1974. Each time there was a 1½ hour session including five different observation situations in the same controlled laboratory setting:

I. Interview (parent, examiner, and child)
II. Free Play Period (mother and child alone)
III. Formal Testing Period (mother and child, and psychologist)
IV. Physical Examination of the Baby (mother, child, and examiner)
V. Ice Cream Sequence (mother and child alone)

Out of this fairly extensive program of protocols 10 hours of observation were analyzed.

Tape recordings were made of all dialogue in each situation at each time. Simultaneously, hand written transcriptions of dialogue and notes as to non-verbal behavior in conjunction with the speech being recorded were also written down.

This study reports on the findings for interview, adult to adult speech (A-A), and for the free play session, adult to child speech (A-C), Time I when the babies were 10-13 months old and essentially in the pre-linguistic period of development, and at Time II when the babies were 22-25 months old and had in most cases begun primative sentences of two words or more. I will mention in advance results replicating our findings in a number of areas have been reported by other investigators with white middle class mothers.

Utterances and their constituents were classified according to a number of linguistic criteria yielding measures of rate, length, complexity, function of sentences, syntax, and semantics. A 2x2 repeated analysis of variance was used to test the null hypothesis of no difference for each of the dependent variables. Post Hoc F tests were used to determine significance between the means of particular cells.

First, I will mention something about the amount of speech used. Results on rate, reflecting the amount of speech a child hears per unit of

time indicates restriction in adult to child speech as compared to adult speech to another adult (61% versus 34%) and slower speech to the year old at Time I than to the two year old at Time II. (There was a 300% increase from speech at one year to speech at two years). Mothers seem to become more sensitive to the child's increased processing ability, increased comprehension, and possibly to his increased demand and need for more verbalization from the mother as he grows older.

Analysis of Mean Length of Utterance (MLU) widely used as a measure of language development indicates heavy restriction on utterance length to the child. There were shorter utterances to the child, with utterances to the adult twice as long as those to the child. (7.8 words versus 3.0). Significantly longer utterances were generated to the older child with over three words compared to less than two to the year old child.

Now in the area of complexity interestingly about 70% of all utterances both times with both listeners were complete sentences. There were not as expected more well-rounded and grammatical sentences to the child and more non-sentences to the adult as hypothesized by Chomsky (1968) and Lenneberg (1969). There were more fragments and ellipticals to the young child which dropped from one in three at age one Time I to one in Five at age two, Time II. Speech became more grammatically correct as the child grew older. Results suggest increasing parental sensitivity to the need for English sentences to be learned overtly at first as suggested by Tom Bever, and the need to model correct base form to the beginning language learner. More simple sentences were addressed to the child suggesting a general simplification of English in shaping utterances directed to the child. In multiclause sentences 84% were addressed to the adult compared to 63% to the child. More main clauses were spoken to the child. No significant change

in syntactic complexity as the child grew was indicated. The parent seems influenced by the child, as the child increases in age sentences to him are more correct and there is greater use of the canonical form NVO giving the child a tractable model of data to process.

In the area of functions of the sentences which the mothers used, and the reference of the sentence - the form of sentences indicating their function- (for example, declaratives as statements, imperatives as commands, and interrogatives as questions), we find the following: the most frequent category used with the children was commands, which accounted for about 60% of the sentences at each age. Recent studies by Nelson (1974) and Holzman (1974) indicate significant implications on the cognitive development of children whose parent used commands. These results also support the thesis of more use of the propositional speech in lower class communication with a directive style to the child and statements to the adult. Most all of the commands were at least overtly affirmative ones. From age one year to age two the relative frequency of statements used with the children decreased and the relative frequency of questions increased. Very few statements - about 13% of all sentences - were used at the second time period. Similarly, the number of utterances repeated to the child within a sample dropped substantially over age.

In the syntactic category more contentives, high information words in the categories of noun, verb, adjective, and adverb were used in addressing the child with more to the younger child Time I. Less grammatical information, fewer function words in the categories of prepositions, conjunctions were addressed to the child (14% versus 25%), with more to the older child. (8% versus 23%). Syntax to the adult is more elaborate with

twice as many auxiliaries addressed to the adult. Greater grammaticality to the child over age suggests that the child as he grows need not rely on word order alone, but can process utterances of greater syntactic complexity and relationship without losing meaning.

In the category of semantics over 80% of nouns used with children were concete nouns and within the speech environment. English speaking children seem more reliably to name things having characteristic size and shape, with parents using tangible referents and correlated visual form in their speech to children. There is an interesting increase in use of noun phrase object as the child grows older, while subjects decrease. Influence on the adult's speech by the child is suggested as increase over adult speech in use of noun phrase object. An interesting result is that far more locative noun phrases and adverbs of place were used with the child than adverbs of time and temporal noun phrases. If time language develops largely out of spatial language, as Herb Clark has suggested, this is precisely the order of frequency we might expect in an environment sensitive to the child's capabilities. In our adult-to-adult samples time vocabulary was relatively more frequent than space vocabulary, this may have been however, partly an artifact of the interview. Analyzing later samples of mother-to-child speech collected can give a better determination of trends of this kind. Eighty per cent of the action verbs were addressed to the child depicting considerably more animal and human movement included in the speech to the child. Less variety of vocabulary is indicated for the child with an increase for both adult and for child at Time II.

Thus rate of speech was found to be significantly slower to the child with an increase as the child grows older, shorter utterances are generated to the child which increase with age, speech to the child is simpler with more simple sentences, main clauses, and less complex structure.

There is more grammaticality and correctness to the child over time. There are more imperatives, affirmatives, and questions addressed to the child, with a second chance to process when he is younger, repetitions decrease with age. There is greater syntactic simplicity, a fewer complex grammatical forms, and content information in A-C speech but an increase of complexity over time. Speech to the child is more concrete with more noun actors and adverbs of place to the child than to the adult but more noun object and adverbs of time over age. There are significantly more action words addressed to the child and less variety of vocabulary. Parent's general speech seemed influenced by the child's speech by a decrease in concreteness and use of noun function adverb time as its use decreased in speech to the child. The increase of richness of vocabulary (TTR) in A-A speech also paralleled its increase in A-C speech.

Results suggest that mothers' speech to children is much different from that to an adult interviewer, that nursery language used with the child changed after they began to talk, and that the children's speech was probably influenced by and influenced the mothers' speech.

However, we have only begun the most difficult part of the work. We cannot yet make any definite claims about specific effects of mothers' speech on their children's language development, or effects of the children's language maturity on the kind of utterances they are likely to be addressed. Once dimensions of the mothers' speech are correlated with those of the children we may be able to make some claims. We would like to be able to learn most from the sequential language interaction between the mother and child itself, and an analysis of the contingencies between verbal and nonverbal acts within the dyads. These are our long-term goals.